DELAWARE CENTER FOR THE
INLAND BAYS
Research. Educate. Restore.

FALL | WINTER 2014

Inland Bays Journal

Clean Water BEGINS UPSTREAM

The Stockley Center Stream Channel Enhancement Project

by Eric Buehl, Land Conservation & Restoration Coordinator

There are fourteen major tributaries.

Those waterways are fed by thousands of small streams, creeks, and ditches that flow through the forests, fields and marshes of coastal Sussex County.

Water quality in these 'feeder' streams affects water quality in the Bays—*for better or for worse*.

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Cow Bridge Branch

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The Inland Bays Journal is a publication of the Delaware Center for the Inland Bays. The CIB is a nonprofit organization and a National Estuary Program. The purpose of the Inland Bays Journal is to educate and inform citizens and visitors to the Inland Bays watershed about this "estuary of national significance."

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In the summer of 2000, I was a guest aboard the boat of State Senator Tom Sharp. We were enjoying the waters of the Little Assawoman Bay and I remarked about how cloudy the water was. That simple observation led to an appointment by Senator Sharp and three succeeding President Pro Tems of the Delaware Senate to the Center for Inland Bays Board of Directors.

My 14 year tenure on the Board was one of the most exhilarating times of my life. The Board of Directors has always been staffed by citizens and appointed officials all who share a passion for the Inland Bays. Our Center is defined and guided by the National Estuary Program and functions daily to achieve the objectives and goals outlined in our Comprehensive Conservative and Management Plan (CCMP) developed by many concerned individuals in Delaware. The Board and Center staff use this plan to frame their everyday efforts to help educate all of us as to how we can do our part to help preserve and protect the bays.

The Board and Center staff have accomplished some truly extraordinary milestones. The Center established partnerships with many other organizations to help Delaware:

- Establish the Center's Indian River facility
- Mitigate many point source nutrient discharges of nutrients
- Establish a team to lead the effort to begin an aquaculture program in Delaware
- Adopt Inland Bay Pollution Control Strategies
- Establish environmental indicators for the health of the bays for scientific analysis

These accomplishments and continuing long-term restoration efforts have earned the CIB the respect of all who love the Inland Bays. Over the years many of our programs have served as models for other National Estuary Programs.

I have had the distinct honor of chairing the Center's Board of Directors for 12 of the 14 years I have just mentioned. My job was easy. I simply helped the myriad of dedicated volunteers, staff, and Board members achieve their goals. I want to thank all of these dedicated individuals for their effort and I want to ask all of you who are reading this article to please help the Center in any way possible.

The Center can only accomplish its goals with the help of all of us who live near, visit, and use our Inland Bays.

Richard W. Eakle

Mr. Richard Eakle,
Past Chair; Appointee of the
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of the Delaware Senate

Atlantic White Cedar Swamp in Doe Bridge Nature Preserve

(Clean Water continued from page 1)

For almost a century, the state's Stockley Center near Georgetown has been there to lend a helping hand to Delawareans with emotional and developmental disabilities. But, the services they offer to residents, is just part of the value that the Stockley Center provides. The Stockley Center campus encompasses over 800 acres of woods, fields, and streams, including one of the most biologically-diverse areas in southern Delaware; the Doe Bridge Nature Preserve.

Almost a decade ago, a small group of CIB staff toured the Stockley Center and found an old stream channel that looked like it, too, was in need of a helping hand. We learned that in the winter months, it was a small stream, but in summer, the water was gone; the area was mowed and almost entirely comprised of turf grass which was ineffective at slowing down and filtering stormwater that entered the channel.

We knew there was potential to restore the forested buffer that was once there; to mitigate some of the runoff and soil erosion occurring upstream, and protect water quality downstream. And, we knew that there was a compelling reason to do it.

The importance of this stream channel lies not in where it is, but where it goes; this little unnamed stream channel flows into Cow Bridge Branch, one of the most pristine of all the headwater streams that carry water to the Inland Bays.

To walk into the Doe Bridge Nature Preserve and along Cow Bridge Branch is to experience what scientists would call 'an intact habitat,' where nature's processes are functioning 'as designed.' The secret to the clear, clean water? Forested banks…buffers…hundreds of acres of mixed vegetation on each side of Cow Bridge Branch that filter nutrients and capture runoff from the land. It is a model of natural beauty and efficiency.

Protecting the water quality in Cow Bridge Branch requires not only protecting the forested buffer, but also restoring water quality in the tributaries that flow into it. The small, stream channel running through the Stockley campus, offered the opportunity to restore one of those tributaries.

A few years after our first visit, on a snowy March afternoon, we met with a facility manager from the Stockley Center to discuss the potential for a project along the stream corridor. Despite being whipped by a cold, wet snow, they walked the area with us, discussed the idea and gave us the go ahead to begin.

The design concept was simple; control the stormwater runoff entering the area and plant a lot of native trees, shrubs, and grasses. Seems simple enough. But as they say, the devil's in the details and what seemed simple was… well…wasn't.

Complications during construction in the late fall and early winter of 2013 included abnormally heavy and frequent rainfall, maintaining access for Stockley workers and residents, and working under power lines. Did anyone mention lots of rain? Try 9½ inches in one month alone! And then came winter, by all accounts one of the coldest on record for many years.

But this spring, with the help of CIB volunteers, over 5,000 native trees, shrubs, wildflowers, ferns, and native grasses were planted to restore the channel and create a buffer along its banks. A large rain garden was created to capture and filter water during periods of high rainfall, and some grading was done to increase the floodplain area.

As with all CIB projects, partners were key. DNREC's Wetlands and Subaqueous Lands Section performed a site evaluation and assisted with permitting; Wesley College's Environmental Studies Program sent summer interns; Ducks Unlimited provided an electronic survey of the area that was used by DNREC's Division of Watershed Stewardship project design engineer, Sara Esposito. The Sussex Conservation District provided equipment and experienced operators to work on the site.

The project cost was approximately $42 thousand, which included the cost of grading and excavation, modifications to the storm drain system, stabilization materials, labor, and the cost of the native plants. Funding was provided by the Delaware Department of Natural Resources and Environmental Control's Community Water Quality Improvement Grant Program and the CIB.

Today, the once-mowed area is now more like a meadow, buzzing with dragonflies and bees, home to frogs and flies alike. Over the next year or two, plants will flower and produce fruit and the transition from meadow to streamside forest will begin to take place as the trees mature and take up more nutrients (good for water quality), are home to a greater variety of birds and insects (good for wildlife). And the water will run clear (good for Cow Bridge Branch).
For more information go to inlandbays.org.

Thanks to all of our partners and friends who are on board with the Bays...

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Gala for the Bays Attracts a Sellout Crowd

On Thursday, August 14, 250 friends and supporters of the Delaware Center for the Inland Bays gathered at the Rehoboth Beach and Country Club for a Gala to celebrate the 20th anniversary year of working together for cleaner Inland Bays.

The evening's presentations opened with tributes from the Delaware Senate and House. Senator Ernie Lopez offered the Senate tribute honoring the CIB for some of its major accomplishments including Delaware's landmark Nutrient Management law, the successful drive by the county to convert nearly 21 thousand septic systems to central sewer, and an 85% reduction in 'point source pollution' entering the bays.

Representative Pete Schwartzkolf presented the House tribute commending the CIB for engaging citizens through public outreach and education, noting that since 2005, CIB volunteers have given more than 30 thousand hours in support of the mission; for habitat restoration—since 2003, 3,000 acres have been protected and 1,500 acres restored in the watershed, and for conducting and sponsoring research on behalf of the Inland Bays.

Without our generous partners, volunteers and donors we would not have been able to achieve the successes of the past 20 years. Please consider "getting on board with the Bays" by making a donation today.

The CIB Names Four Friends of the Bays for 2014

The 2014 Friends of the Bays Awardees were recognized for their significant contributions over time in support of the mission of the Delaware Center for the Inland Bays.

Volunteer Award

Dr. Dennis Bartow

Dennis first joined our ranks as a teacher for our James Farm Middle School Program in 2008, and in 2009 stepped up to be our Schoolyard Habitat Coordinator, but his volunteer hours quickly surpassed his part time employment. In 2009, he became site leader at James Farm for the Horseshoe Crab Survey, then, volunteer project leader, training new volunteers, developing survey schedules, managing equipment and expanding our horseshoe crab tagging program. He has assisted with osprey banding since 2010, capturing magnificent photos on those trips. In 2011 when the Inshore Fish Survey began, he signed up and was soon 'right hand man' to project leader, Ron Kernehan. The common thread that runs through all of Dennis's service is education. Each year he judges the Sussex County Science Fair and presents the CIB award. As anyone on the CIB staff can attest, Dennis is there if you need him; as photographer at special events, pitching in at the Inland Bays Cleanup, sharing his bug collection at the Bethany Beach Nature Center, or leading walks at James Farm. Dennis Bartow has the rare ability to be both team leader and worker bee, depending on what the situation requires, and he does both with grace and enthusiasm.

Partner Award:

DNREC, Division of Watershed Stewardship

Representative Pete Schwartzkoph presented the Partner Award to Frank Piorko, Director of the DNREC Division of Watershed Stewardship. Frank accepted the Partner Award on behalf of the Division of Watershed Stewardship. Over the past 20 years, the Division has been instrumental in countless initiatives to improve water quality in the Inland Bays including the development of the Management Plan and the Water Use Plan for the Inland Bays, establishment of environmental indicators for the Bays, participation in stream restoration projects, and partnership on wetland research and restoration.

Director's Choice Award

Rick Eakle, CIB Chair of the Board, 2002–2014

Executive Director, Chris Bason, presented the Director's Choice Award to Rick Eakle honoring him for fourteen years of service to the CIB Board of Directors. For twelve years, he served as Chair of the Board through times of transition and growth, demonstrating year after year, his dedication to the success of the mission and the organization. Under his leadership, the CIB moved to the heart of the watershed, renovating the former Coast Guard barracks into a model of green design and construction and renewable energy. He was at the helm for the completion of the most comprehensive State of the Bays Report to date and the update of the Comprehensive Conservation and Management Plan, and created the 'Tiger Team' that led the Shellfish Aquaculture Initiative.

Business Award

Perdue Farms

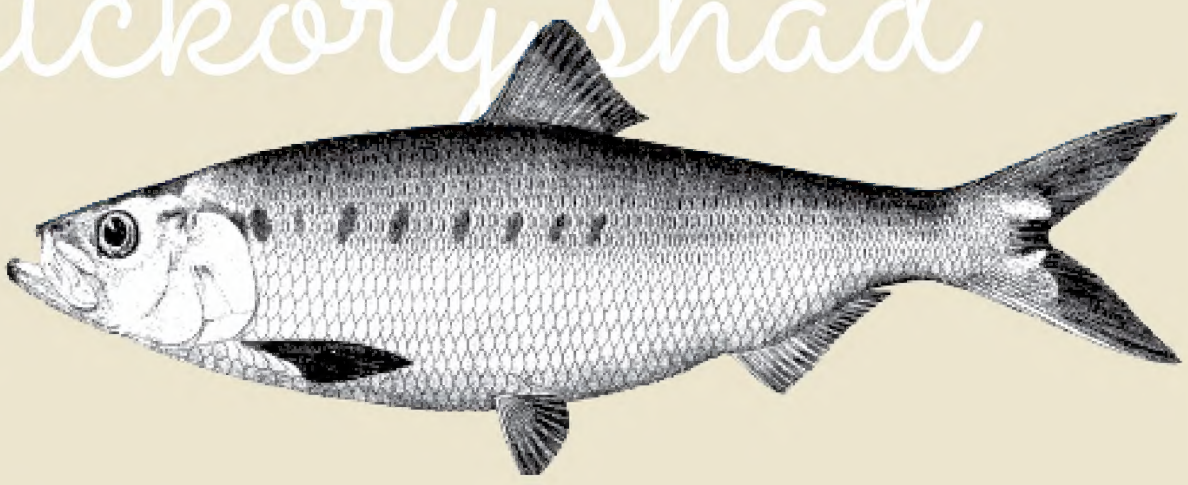
Jim Perdue, CEO of Perdue Farms accepted the Friend of the Bays Business Award presented by Delaware Department of Agriculture Secretary and CIB Board member, Ed Kee. In presenting the award, Secretary Kee recognized Perdue Farms for working with the CIB to develop model farms, requiring growers to adopt best management practices for nutrient handling; for its pioneering work establishing AgriRecycle to convert poultry litter into organic fertilizer and in the use of phytase in poultry feed to decrease the phosphorus content in manure. Secretary Kee also commended Perdue Farms for adding 'Planet' to its long-standing corporate goals of People, Products and Profitability—a company-wide commitment to environmental stewardship.

The first to arrive are the graybacks, known to most people as alewives. They come by the thousands, swimming the miles quickly and darting past sluggish river fish just waking from their winter's nap.

Not long after, the tiny blooms of white shadbush greet the schools of shad making their way upstream. Their silvery iridescent scales are shaded with blue and green, the colors of spring. The shad come in waves, strong with the tide.

alewives

hickory shad



Rites of Spring

CIB Seeks to Restore the Spring Migration of Fish on Inland Bays Creeks

by Roy W. Miller, Policy Coordinator, CIB

If we could turn the clock back a hundred years or so, we might be surprised by the abundance of migratory fish rushing up the rivers and creeks of the Inland Bays to spawn each spring. That is not the case today, so what has happened to these fish?

In a word…dams. Over a century ago, many of the rivers and streams on the Inland Bays were impounded to create mill ponds to supply power. The mills are long gone, but most of the dams remain.

Freshwater fish continue to thrive in these ponds, many of which are now maintained for recreation, but the great spring migration of fish up our rivers is no more. The ponds are no longer accessible to anadromous species—fish that return from the sea to the rivers where they were born, in order to breed--like alewife, blueback herring (together known as river herring) and hickory shad.

Also mostly absent from the spring migration is another species that once spent part of its life cycle in the headwater streams above the dams—the American eel, but they have the opposite migration from anadromous fish. The eels spawn offshore in the waters of the Sargasso Sea and the young eels known as glass eels travel up the freshwater tributaries and remain there until reaching maturity when they migrate back to the sea to spawn.

Spawning runs have so drastically declined up and down the East Coast that the two river herring species were recently under federal review as possible candidates for threatened species status. Since 2011, the American eel has also been under consideration for listing as a federally endangered or threatened species, but no action has been taken.

A Restoration Opportunity

The Delaware Center for the Inland Bays sees this scarcity of historically important migratory fish as a restoration opportunity, and this spring completed a feasibility study to determine what actions would be needed to restore these fish and eel to our upper tributaries. Andrews, Miller and Associates and their subcontractor Versar, Inc. were selected to undertake the work. Their task:

- Assess the condition of the freshwater streams and ponds above the dams to evaluate their suitablity to support spawning and rearing of river herring, shad and American eels
- Examine of all of the existing physical-chemical and biological data available for each dam and the ponds upstream of these dams
- Prioritize dams for installation of fish and eel passage devices

Recommendations of the study

Their report assessed the eight dams and ponds and prioritized them according to their potential to restore spawning migration. Although dam removal is the most effective way to restore runs of migratory species, that was not considered an option on these tributaries and the consultant was directed to recommend the most cost-effective fish passage device for each location.

Since any fish passage restoration project can only be successful if passage is provided past the first dam that a fish or eel will encounter, the first dams on each tributary system were given the highest weighting in the evaluation model. Two 'first dams,' Millsboro dam on Indian River, and Burton Pond dam on Herring Creek, were recommended as the highest priority dams.

Last to arrive are the bluebacks. They are greeted by the warming waters of spring.

Excerpted from *The Conservationist* April 1993 by Eileen C. Stegemann & Douglas Stang

photo credit: www.gmri.org

bluebacks

A fish passage device called the 'Alaska-steeppass' fish ladder was recommended for those two locations as they are currently in use at eleven dams in Kent and Sussex Counties and have proven successful.

Goslee Pond dam on upper Love Creek, and Millsboro Pond dam were ranked first and second for installation of eel passage devices. Millsboro Pond dam already has an eel passage device, but it was determined that it could be improved. For Goslee dam, a 'low tech' device, such as the one at Millsboro dam that provides traction for the baby eels to squirm their way up and over the dam is recommended. The water velocity through the Alaska steeppass ladder is too fast for young eel to use.

Next Steps

Now that the restoration potential for each of these dams has been prioritized, private owners of the ponds need to be found and brought on board; issues of most concern are that the safety of the dam will not be compromised by the installation of a fish or eel 'ladder,' and that their pond will benefit from the re-introduction of native species.

Six of the eight dams in the study are owned by the Delaware Department of Transportation and are located at public road crossings. Two of the ponds, Millsboro and Ingrams, are publicly owned and the rest are in private ownership.

A search for grant sources to fund the installations is underway. The estimated cost to install an Alaska steeppass ladder at these sites ranges from $195–230 thousand per ladder. If permission is granted and funding is secured, the permitting process can begin and a contractor hired to do the fabrication and installation.

Only with the support of many will this project succeed in returning the natives to the waters where they once thrived. **The full report can be viewed at inlandbays.org.**

Notes from the Field

July 21, 2014

Dr. Steve Britz, Love Creek Team

Yes! After a gray and drizzly weekend the sun is dawning clear and bright. In a few minutes I'm off to collect water samples for bacteria measurements thanks to the Citizen Monitoring Program. I'll collect samples at Bundicks Branch, Beaverdam, Goslee Creek at Jimtown, Love Creek at Robinsonville and Love Creek off our pier.

Salinities in Love Creek continue to run low following all the rain we had a couple weeks ago. Dissolved oxygen values were running less than 4 mg/liter yesterday morning. I also measured high nitrate values in Bundicks Branch and Goslee Creek as well as upper Hetty Fisher Glade. Nitrates were lower below Goslee Pond (Robinsonville Rd.) and went to undetectable by the time Love Creek passed through the upstream marsh area. The values remained undetectable by my test down to the bridge.

Bill Ullman highlighted the importance of upstream ponds in buffering nutrient input to the Inland Bays in his lecture last week. My measurements so far seem to support this interpretation for the role of Goslee Pond. Nitrates also appear to be going down in Hetty Fisher Glade as it winds down to Love Creek, supporting the importance of marshes to filter nutrients.

Steve is a Ph.D. plant scientist at the USDA in Beltsville MD. He has owned a home on Love Creek since 1995. To read more of his field notes from Love Creek go to the Love Creek page at inlandbays.org.

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MORE OYSTER SHELLS MEAN MORE OYSTERS —more oysters mean YUM (and cleaner Bays!) and less trash to the landfill. WIN! WIN! WIN!

HERE'S HOW IT'S DONE

Partner restaurants recycle oyster shells from their raw bars. They are picked up and put in bins to cure for 6–12 months. Then the shells are ready to go to work in the Bays!

WHAT WILL WE DO WITH THE OYSTER SHELL?

The shells will be used for research and restoration. Oysters need hard bottom to form reefs and like nothing better than oyster shell. Shell will also be used in 'living shoreline' projects to reduce shoreline erosion.

Thank your favorite restaurant for saving their shucks for the Bays!

Delaware Inland Bays Shell Recycling

inlandbays.org

Our partners on this project include the Department of Natural Resources and Environmental Control's (DNREC) Universal Recycling Grant and Loan Program, the Delaware Chapter of the Nature Conservancy (TNC), Clean Green Horizons, and Chesapeake Utilities.

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